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# **FEDERAL**

## **INVESTIGATING AIR ACCIDENTS**

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July 10, 1941.—Committed to the Committee of the Whole House on the state of the Union and ordered to be printed

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Mr. Nichols, from the Select Committee to Investigate Air Accidents, submitted the following

### **PRELIMINARY REPORT**

[Pursuant to H. Res. 125]

#### **FOREWORD**

Your committee desires to express its appreciation to Federal, State, and city officials; the Air Transport Association of America; officers and employees of air carriers; and many distinguished civilian and military aviation experts for their wholehearted cooperation and able assistance.

Your committee has regarded its task as one of paramount public concern, calling for its best efforts to secure and submit such relevant facts to the Congress as shall make it possible to enact sound legislation and promulgate regulations advancing the growth and development of aviation and promoting greater safety in the operation of all civil and military aircraft.

#### **INTRODUCTION**

As the result of a number of major accidents occurring on commercial air lines in 1940 and 1941, involving the loss of many lives, the House of Representatives adopted House Resolution 125, creating a select committee of five members to make a full and complete investigation of such crashes and other air accidents. The committee was further instructed to investigate any other matters, and to ascertain all pertinent facts in the field of commercial and civil aviation, which it should deem necessary for the purpose of obtaining adequate information to enable it to recommend action.

The committee which was appointed consists of Representatives Jack Nichols, of Oklahoma, chairman; Richard M. Kleberg, of Texas; Herron Pearson, of Tennessee; Everett M. Dirksen, of Illinois; and Carl Hinshaw, of California.

#### **PROCEDURE AND SCOPE OF INVESTIGATION**

One of the first things which the committee did was to take an informal course in aeronautics to familiarize itself with air-navigation facilities, meteorological procedure, and other matters in order to better comprehend the field in which it was expected to work. This instruction consisted of lectures and

blackboard demonstrations so that the committee would have a definite and accurate idea of the whole procedure under which civilian planes take off on courses of directed flight, the type of weather information which is supplied during flight, the airway facilities which are made available in the course of flight, the type and sufficiency of the instruments which are at the disposal of the airplane pilots, the sufficiency and adequacy of airport facilities, and the procedure by which civilian planes are brought down to landing areas.

With this background as a supplement to the knowledge which the various committee members had, it then became necessary to determine the procedure to be followed in the conduct of hearings and investigations.

After a long and informal discussion the committee was unanimous in its belief that it could best serve the cause of air safety and elicit the greatest amount in information by conducting closed hearings.

The committee believed that this type of procedure serves a two-fold purpose. In the first place witnesses speak more freely when conscious of the fact that their intimate observations will not be made public. The committee realized that it must call many employees of the Government and of the air carriers and that some disclosures by the witnesses might serve to prejudice their positions if this testimony was made public. Moreover, the committee decided to permit witnesses to testify off the record if they so desired. Other facts which the committee had in mind were that while air commerce is growing at a phenomenal rate, its continued growth is directly contingent upon the factor of air safety. There was, therefore, involved in this investigation a delicate psychological factor. The committee did not want to be guilty of damaging or impairing public confidence in the safety of air transportation. The committee is convinced that the results which have been obtained and the general confidence which has been manifested and expressed by those with whom it has had contact have borne out the soundness of its procedure.

The committee also determined that it would first investigate the most recent of the air accidents and work back in order to avail itself of all possible testimony while it was still fresh in the minds of witnesses. Having determined on this procedure, the committee thereupon proceeded into the field and held hearings in various cities. Specific reports on these accidents are in preparation.

#### GROWTH AND PROSPECTS OF THE AIR INDUSTRY

The growth of commercial air service during the last decade has been truly phenomenal. In 1930 there were only 417,000 air passengers for the entire United States. By 1935 this number had more than doubled and reached 860,000. By 1940 that number had more than tripled and there were 2,900,000 air passengers. In 1931 air line members of the Air Transport Association of America carried passengers 119,968,577 passenger-miles, transported 1,151,348 pounds of express and 9,643,211 pounds of mail. In 1940 they carried passengers for an estimated 1,455,600,031 passenger-miles and transported 14,385,188 pounds of express and 33,566,341 pounds of mail. This shows an increase in passengers and express of better than 1,000 percent within 9 years. During these years as new planes were made available, new schedules were approved, more aids to navigation were provided, and airport facilities were expanded. The experiences of the past are prophetic of the future. Air commerce is expected to grow by leaps and bounds. It is anticipated that by 1945 there will be 11,000,000 sche-

duled air passengers. By 1950 the number is estimated at 22,000,000. It is obvious from its past growth that the aviation industry has assumed such proportions as to merit the attention and thorough study of the Congress, the executive agencies, and the country. It is manifest that no stone must be left unturned in the interest of air safety.

#### COMPONENTS OF SAFETY

In a general way it may be said that four major factors enter into the safety picture in air commerce. The first is the safety of the plane's structure embracing its airworthiness, safety equipment, and navigation facilities, and its capacity to carry large loads of passengers under adverse weather conditions. The second component is the personnel factor. It relates to trained and skilled pilots and copilots, ground personnel engaged in dispatching and supervising flights, and the operation of all forms of ground facilities. The third component is the adequacy of navigation facilities along the Nation's airways, which direct the pilots in flight, keep them in close communication with the ground, and furnish them with the latest weather reports to aid them in successfully terminating their flight. The fourth component of safety is the adequacy of airport facilities. This includes the size and location of airports, the length and width of its runways, the sufficiency of approach and airport lights, the adequacy of the equipment used in airport control towers, and the training and skill of tower operators entrusted with the responsibility of safely directing a plane to the landing strip.

In considering these safety factors, as applied to commercial air lines, there are numerous complications. The commercial air lines are privately owned and operated. They are engaged as common carriers of passengers, mail, and express on air routes established by the Civil Aeronautics Board under rules and regulations made by the Board. These rules and regulations are enforced by the Civil Aeronautics Administrator. Nearly every commercial flight originates and terminates at municipally owned airports. The tower operators at these airports, who control landings and take-offs, are city employees, subject to the vicissitudes of local elections. Thus, we have involved in nearly every flight of a commercial plane the complexities incident to multiple control.

Immediately surrounding nearly all airports is privately owned land upon which buildings, structures, or other improvements may at any time be erected at such heights as to impair or destroy the safety and usefulness of these landing areas. Therefore, unless adequate zoning acts are passed by State legislatures authorizing counties, cities, and towns jointly or severally to zone property, frequently situated outside of the corporate limits of any city, there is an ever-present threat to millions of dollars of Federal, State, municipal, and private funds invested in airports throughout the Nation.

Despite these substantial investments there is an acute shortage of adequate landing areas suited to the needs of commercial air lines and other large and fast planes. To illustrate, within only a few months after its completion, LaGuardia Field at New York approached the limit of its traffic load. Frequently, because of congestion, commercial airplanes must fly over this port for long periods of time before being permitted to land.

Further complications involved in the determination of many aeronautical problems are the jealousies existing between cities and States, particularly where the political control vests in different parties. And finally, there is the

age-old problem of States' rights which arises to further confuse and delay the sound solution of this problem.

While the committee is primarily concerned with air safety as it pertains to scheduled flights by air carriers and their interrelationship with other aircraft, it is not unmindful of the fact that many other elements enter into the picture. Very few people have even the slightest appreciation of the confusion that now exists in air traffic. There are 83,000 certified pilots in the United States. There are 22,700 privately owned and operated planes. These planes are not required by the Civil Aeronautics Board to file flight plans with the Civil Aeronautics Administration when engaged in contact flying, and many of them are not even equipped with one-way radios. Under certain circumstances, these planes are extremely dangerous to commercial aircraft when they inadvertently, or sometimes intentionally, preempt the air space or paths of flight designated to commercial carriers by the Civil Aeronautics Board. Court actions are now pending against some aviators who have persisted in this practice.

Adding further confusion and danger to the air-traffic problem are thousands of military and naval planes daily engaged in all manner of training, including dive bombing and gunnery practice. In addition, there is multiple evidence of the lack of consideration for commercial aviation in the establishment by the Army and the Navy of antiaircraft and gun emplacements, which fire projectiles up, into, and through designated airways used by commercial airlines. Then there are thousands of planes being manufactured in every section of the United States, which must first be flight tested and then ferried to Canada and elsewhere for delivery. These planes are being flown across the United States in ever-increasing numbers. They must land from time to time at our principal airports. It follows that in the interest of safety the whole field of air navigation requires the closest scrutiny for the purpose of developing a thoroughly comprehensive pattern of air conduct.

#### FATAL AND SERIOUS ACCIDENTS IN AIR CARRIER OPERATIONS IN 1940 AND 1941

In 1940 and 1941 there were nine serious accidents involving commercial airlines, which are tabulated as follows:

Date	Place	Operator	Fatal	Serious
Jan. 12, 1940	Moline, Ill.	United Air Lines		1
Aug. 31, 1940	Lovettsville, Va.	Pennsylvania Central Airlines	25	
Nov. 4, 1940	Centerville, Utah	United Air Lines	10	
Dec. 4, 1940	Chicago, Ill.	do	10	6
Dec. 11, 1940	St. Louis, Mo.	American Airlines, Inc.		1
Jan. 23, 1941	do	Transcontinental & Wstn. Airlines	2	5
Feb. 26, 1941	Atlanta, Ga.	Eastern Air Lines	8	6
Apr. 3, 1941	Vero Beach, Fla.	do		8
Apr. 16, 1941	Charleston, W. Va.	Pennsylvania Central Airlines		2
Total			55	29

#### POTENTIALLY SERIOUS ACCIDENTS TO AIR CARRIERS IN 1940 AND 1941

Other potentially serious accidents to commercial airlines in 1940 and 1941 which caused no fatalities are as follows:

December 11, 1940, St. Louis, Mo., American Airlines.

December 14, 1940, Bismarck, N. Dak., Northwest Airlines.  
December 28, 1940, Miami, Fla., Pan-American Airways.  
January 4, 1941, Birmingham, Ala., Delta Air Corporation.  
January 5, 1941, near Newhall, Calif., United Air Lines.  
February 7, 1941, Bellefonte, Pa., All American, Inc.  
February 9, 1941, Duluth, Minn., Northwest Airlines.  
February 26, 1941, Kansas City, Mo., Transcontinental & Western Airlines.  
March 10, 1941, Cincinnati, Ohio, American Airlines.  
April 3, 1941, Vero Beach, Fla., Eastern Air Lines.  
April 16, 1941, Charleston, W. Va., Pennsylvania-Central.  
April 23, 1941, El Paso, Tex., Continental Air Lines.  
June 1, 1941, Wichita, Kans., Transcontinental & Western Airlines and Braniff (collision on the ground).  
June 3, 1941, Joliet, Ill., Chicago and Southern.  
June 5, 1941, Tampa, Fla., Eastern Air Lines.  
June 11, 1941, Sioux City, Iowa, Mid-Continent Airlines.  
June 21, 1941, Fort Worth, Tex., American Airlines.

The above accidents are sometimes called "miracle accidents." Your committee believes that the investigation of nonfatal accidents is often more productive than an investigation of more serious crashes causing fatalities. This is particularly true where no member of the crew survives to tell at least some part of the story.

In other than air carrier flying, there were 55 collisions with utility wires in 1940 compared with 53 for the preceding year; 2 of these accidents resulted in fatalities and 1 of them in serious injury; 5 of the airplanes were completely demolished and 39 received major damage. This is only one illustration, of the many received in evidence by the committee, which indicates the necessity of zoning laws requiring the removal of existing hazards and forbidding the building of new obstructions around airports.

#### FATAL ACCIDENTS IN THE ARMY AIR CORPS FOR 1940 AND 1941

Indicative of the increased military activities of our country, the committee is advised by the War Department that during the fiscal year of 1939-40 there were 41 fatal accidents in the United States Army Air Corps, while in the fiscal year of 1940-41 there were 121 fatal accidents.

#### INVESTIGATIONS CONDUCTED BY THE COMMITTEE

The select committee has thus far conducted the following investigations:

1. American Airlines accident at Cincinnati, Ohio, which occurred on March 10, 1941.
2. Eastern Air Lines accident on February 26, 1941, at Atlanta, Ga.
3. Eastern Air Lines accident on April 3, 1941, at Vero Beach, Fla.
4. Pennsylvania-Central Airlines accident at Charleston, W. Va., April 17, 1941.

5. Transcontinental & Western Airlines accident at St. Louis, Mo., January 23, 1941.
6. American Airlines accident at St. Louis, Mo., on December 11, 1940.
7. United Airlines accident, Chicago, Ill., December 4, 1940.
8. Chicago & Southern Airlines accident on June 3, 1941, at Joliet, Ill.
9. United Airlines accident near Centerville, Utah, November 4, 1940.
10. Transcontinental & Western Airlines and Braniff collision on the ground at Wichita, Kans., June 1, 1941.
11. Eastern Air Lines accident at Tampa, Fla., June 5, 1941.
12. Mid-Continent Airlines accident at Sioux City, Iowa, June 11, 1941.
13. American Airlines accident near Forth Worth, Tex., June 21, 1941.

Your committee will in due course make specific findings as to the cause or causes of these accidents.

#### ANALYSIS OF THE CAUSES OF AIR ACCIDENTS

Generally speaking, adverse weather is a major contributing factor in the more disastrous air crashes. The Congress cannot change the weather, but it can provide for better observations and more accurate forecasts of weather through appropriations for research work and for a larger and better trained weather personnel. Congress can provide for better facilities to meet the hazards of darkness and adverse weather and for continued research to overcome the hazards of ice.

The second cause of many crashes is inadequate lighting of airports and their approaches. Minimum standards must be legislated by the Congress with respect to airport lighting, for the majority of commercial air-line accidents resulting in fatalities occur at night and under adverse weather conditions. Authority should be granted to the Civil Aeronautics Administrator to license airports and to determine the character of the interstate operations which may be carried on at such airports.

The third cause of accidents is on a parity with the second, but is subject only indirectly to remedial action by the Congress, and that is, the inherent defects in, obstructions upon, and hazards about, the existing airports. Your committee believe that the only direct action the Congress can take on these matters is to authorize the licensing and grading of airports by the Civil Aeronautics Administrator, and thereby limit the use of many airports to day-light and good weather operations until such time as the cities and States in which they are situated shall take the necessary steps to insure the safety of interstate commerce. This will require the enactment by many State legislatures of enabling acts empowering cities and other subdivisions of government to zone all approaches to their airports.

The fourth cause, difficult to classify because it enters into almost every major accident, to a greater or lesser degree, is human error. This applies alike to ground and flying personnel. With but a few exceptions, in the accidents that this committee has investigated, the accident occurred as a result of a contribution of human error. And in nearly every case, had one less error been

committed, the accident probably could have been prevented. The purpose of legislation which has been and will be proposed by this committee is to provide such regulations and facilities as will reduce human errors to the lowest possible minimum.

#### CONTRIBUTING CAUSES FOR OTHER ACCIDENTS

Other contributing causes of accidents have been found to be defects in flying equipment, such as windshield wipers and de-icers; the want of an adequate number of trained weather observers and forecasters; inadequate and defective communications, and the want of trained control tower operators.

From the investigations your committee has conducted so far, we have unanimously arrived at the conclusion that bad weather, icing, poor lights, defective airports, hazardous obstructions on and about airports, loose organization, faulty communications, and human error have contributed jointly and severally to cause every serious accident which has occurred in the past 2 years. We have found no evidence of sabotage in any of these accidents.

#### RECOMMENDATIONS

At this time your committee recommend:

1. That the Government of the United States assume jurisdiction of all navigable air space over the United States, its Territories and possessions.
2. Creation of some authority in whom will be vested control of all traffic moving through the navigable air space and over all missiles projecting into the navigable air space.
3. The enactment by the Congress of legislation, to give full force and effect to recommendations 1 and 2 above, by authorizing the President of the United States to appoint a Coordinator of Air (or the creation of some other agency of government), who shall be authorized to control and to apportion the navigable air space over the United States, its Territories and possessions to military and other aircraft, and to such other activities as must be carried on through navigable air space.
4. The enactment of legislation establishing and setting up minimum requirements for lighting of airports and other landing areas to be enforced by the Civil Aeronautics Administrator.
5. The enactment of legislation empowering the Administrator to detail annually not to exceed 25 employees of the Civil Aeronautics Administration to engage in technical or professional duties for training at Government expense.
6. The enactment of legislation to provide for the training of control tower operators.
7. The committee recommends the serious consideration of legislation which would place at least one man on every shift in all airport control towers under the supervision of the Airway Traffic Control Section of the Civil Aeronautics Administration so that Federal air traffic control would extend from ramp to ramp with respect to commercial air lines.

The above recommendations should not be construed to mean that it is the opinion of the committee that all the problems of air safety would be solved by



such legislative enactments. Your committee would rather have deferred making any recommendations until it had completed its investigation, but the present national emergency requires action and not prolonged consideration of these imperative needs. Your committee hereafter will have further recommendations to make to the Congress.

JACK NICHOLS, *Chairman.*

EVERETT M. DIRKSEN.

CARL HINSHAW.

RICHARD M. KLEBERG.

HERRON PEARSON.

JULY 9, 1941.